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Promotion of Long-Acting Reversible Contraception Among Adolescents and Young Adults

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Abstract

Introduction: Intrauterine devices and contraceptive implants are recommended as first-line contraceptives by medical professional societies. However, uptake among US women lags substantially behind other developed countries. Little information is available on the extent to which clinicians document discussion about long-acting reversible contraception (LARC) in this patient population. We sought to determine the frequency with which clinicians document LARC discussion with eligible women aged 14–25 in a training clinic and evaluate factors associated with LARC discussion and uptake.

Methods: We conducted a retrospective chart review of all visits of non-pregnant women aged 14–25 seen at an obstetrics and gynecology resident physician clinic during a calendar year. A logistic regression model was used to assess demographic factors associated with LARC education and uptake.

Results: Among 450 visits by eligible patients, LARC discussion was documented during 47.8% (215/450) of visits. Among visits with documentation of LARC counseling, 45.6% (98/215) had documentation of a LARC placement plan. Among patients who decided to initiate LARC, 40.8% (40/98) had a device placed at the same visit. LARC placement was documented during 8.9% (40/450) of visits. Clinicians documented LARC counseling for women aged 14–19 years more

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frequently than for women aged 20–25 years. Compared to women who did not use any method of contraception, clinicians documented LARC counseling less frequently for women who used short-term hormonal contraception.

Discussion: Clinicians in a training clinic failed to document LARC counseling for more than half of eligible patients. Every clinical visit is an opportunity to assess risk of unintended pregnancy and ensure that contraceptive needs are addressed.

PR´ECIS

Young women have low rates of documented counseling about long-acting reversible contraception, despite professional recommendations that these methods be considered first-line.

Keywords

long-acting reversible contraception (LARC); contraceptive uptake; contraceptive counseling; intrauterine device; contraceptive implant; adolescent

INTRODUCTION

Nearly half of all pregnancies each year in the United States are unintended, and a significant proportion involve adolescents and young women.¹ Unintended pregnancies occur most commonly among adolescents aged 15 to 19 years (75%), followed by women aged 20 to 24 years (59%).² Additionally, there are substantial disparities in the rates of unintended pregnancy between racial and ethnic groups. Even after socioeconomic factors, such as income, are accounted for, non-Hispanic black women have the highest rate of unintended pregnancy, while non-Hispanic white women have the lowest rate.² Disparity in unintended pregnancy rates also exists in Hawai'i where Native Hawaiian and Pacific Islander women, who represent 26% of the female population, account for 61% of unintended pregnancies, while white women, who represent 43.6% of those population, account for 8.8%.^{3,4}

The public health implications of unintended pregnancy are substantial. Adolescent childbearing has a number of negative long-term health consequences. Teen parents are at a higher risk for depression, substance abuse, living in poverty, and rapid repeat unplanned pregnancy.⁵ They also have lower educational attainment and higher levels of intimate partner violence than their non-childbearing peers.⁵ Compared with pregnancies of older women, teen pregnancies are more likely to result in neonatal death, low-birthweight infants, and premature delivery.⁶ Additionally, children born to adolescent parents are at greater risk for abuse and neglect, and perform less successfully on language and cognitive skill assessments than children of non-adolescent parents.⁷

Increasing access to and uptake of highly effective contraception is one important public health intervention for addressing the high unintended pregnancy rate in the United States.⁸ Approximately half of women in the United States with an unintended pregnancy report using contraception at the time of conception.² This reflects that the most commonly used methods in the United States are associated with high failure rates in typical use.^{9,10} The annual typical-use failure rate of condoms alone is 18%, and that of short-term hormonal

contraceptives such as combined oral contraceptive pills (COCs), the vaginal ring, and the patch are 8–9%.¹⁰ By comparison, the failure rates of long-acting reversible contraceptives (LARC), including intrauterine devices (IUDs) and the contraceptive implant, are 0.05–0.8%.¹⁰

Focusing on adolescents and young women, the discrepancy between typical use failure rates of short term hormonal contraceptives and LARC are even more pronounced. According to Raine et al in 2011,¹¹ pregnancy rates of adolescents and young women who initiated pills, the vaginal ring, and the patch were 16.5, 30.1, and 30.5 per 100 person-years, respectively. LARC methods also have significantly higher annual continuation rates (78–81%) than short-term hormonal methods (68%) and condoms (53%).¹⁰ Even though the continuation rate of LARC methods among adolescents is slightly lower than that of older women, the one-year continuation rate is still as high as 72%.¹² Consequently, the American College of Obstetricians and Gynecologists (ACOG)¹³ and the American College of Nurse-Midwives (ACNM)¹⁴ state that LARC methods are excellent reversible methods for preventing unintended pregnancy, rapid repeat pregnancy, and abortion in young women, and encourage healthcare providers to consider such methods as options for all women, including adolescent patients.

Although LARC is strongly recommended by ACOG and other medical professional societies, uptake among US women lags substantially behind that of other developed countries.¹⁵ LARC use among adolescents and young adults at risk for unintended pregnancy was only 3.2% and 11.1% respectively between 2011–2013, while in Scandinavian countries uptake of IUDs is closer to 30%.¹⁶ However, when barriers such as cost and access to LARC are eliminated, LARC uptake in the United State has been demonstrated to increase to nearly 70% among adolescent women.¹⁷ Increasing LARC uptake among women who desire these methods is one promising strategy to address unintended pregnancy, particularly when the cost-effectiveness of LARC is considered.^{7,8,18}

At present, little or no information is available on the extent to which clinicians discuss LARC methods with eligible patients, or the impact of demographic factors on LARC discussion and uptake in a young and diverse population. This study was conducted to examine LARC counseling and uptake rates among adolescents and young women seen in a high-volume hospital-based obstetrics and gynecology resident clinic in Honolulu, Hawai'i.

MATERIAL AND METHODS

We conducted a retrospective chart review of all visits of non-pregnant women aged 14–25 at the primary obstetrics and gynecology clinic associated with the residency training program at the University of Hawai'i, in Honolulu, Hawai'i during the calendar year 2014. We did not include women who had previously undergone sterilization or women seen for ancillary visits (services such as vaccination that did not involve contact with a clinician). We further limited our analysis to women who were eligible for LARC. Women were determined to be eligible for LARC if they were sexually active (or seeking contraception for planned future sexual activity); not currently using a LARC method; did not actively plan to become pregnant; did not report being in exclusively same-sex sexual relationships; and

did not have absolute contraindications to use of all LARC methods (defined as Centers for Disease Control and Prevention Medical Eligibility Criteria Category 4).¹⁹ Additionally, we excluded visits scheduled specifically for the purpose of LARC insertion, as these women had made decisions to initiate LARC prior to the study. Some women had more than one eligible visit during the year.

All analyses were performed on a per-visit basis since patients should be assessed for risk of unintended pregnancy as well as concerns and satisfaction related to contraceptive use at each visit. This study was approved by the Hawai'i Pacific Health Research Institute and the Western Institutional IRB. Demographic information collected from the electronic health record included: age, ethnicity, race, insurance status, type of scheduled clinic visit, and marital status. Contraceptive information, including method of contraception at the beginning and the end of the visit, were recorded. For patients who concurrently used more than one contraceptive method, the method that had the highest typical use efficacy was documented.¹⁰ Our primary outcome, discussion of LARC, was defined as specific chart documentation by a clinician (resident or attending level) that at least one LARC method was discussed during the visit. We defined LARC uptake as LARC device placement at the visit, as indicated by the presence of a procedure note for the insertion of the device in the medical record. A decision to initiate LARC was defined as documentation of a LARC placement plan in the clinical record, regardless of whether a LARC device was inserted at the visit. In our institution, clinicians receive extensive and ongoing LARC didactic and technical training. They are encouraged to document their counseling in the medical record. However, there is not a contraceptive counseling template used in notes and documentation varies per clinician.

Study data were collected and managed using REDCap electronic data capture tools hosted at John A. Burns School of Medicine, University of Hawai'i at Mānoa.²⁰ Electronic data abstraction forms and procedure manuals were created and reviewed for consensus. Data abstractors were trained to evaluate the entire medical record for each encounter, including notes of resident and attending physicians, patient problem lists, prescriptions, and procedure notes, in a systematic and consistent manner to ensure data collection was accurate. Two principal investigators audited the data abstraction at regular intervals to ensure data were collected according to protocol.

Statistical analysis was performed using SAS version 9.4 statistical software (SAS Institute; Cary, NC). Descriptive statistics were calculated for demographic variables. Chi-squared and Fisher's exact tests were conducted to evaluate our primary and secondary outcomes, and a logistic regression model, which accounted for non-independent observations, was used to obtain estimates of the associations of age and race on LARC discussion and uptake, for which a purposeful selection algorithm was used for variable selection.²¹

RESULTS

A total of 1,039 clinical visits were reviewed. Pregnant women, women who had undergone sterilization, and ancillary visits accounted for 316 visits, leaving 723 (69.6%) visits representing 427 different patients. Among these, 40 visits were of patients who were not

(and were not planning to become) sexually active, 129 visits were patients already using LARC, 34 visits were patients who were actively planning to become pregnant, 5 visits involved patients who reported exclusively same-sex sexual relationships, and 65 visits were patients who were scheduled specifically for LARC insertion. Thus, the final analysis included 450 (43.3%) visits representing 305 unique patients (Figure 1). Among these 305 patients, 36.1% (110/305) had more than one eligible visit during the study period, of which 79.1% (87/110) had 2 visits, 14.5% (16/110) had 3 visits, and 6.4 % (7/110) had more than 3 visits. Demographic characteristics of all subjects are shown in Table 1. Mean age was 20.7 years with a standard deviation of 3.0 years. Among women aged under 20 years, 11.7% (12/103) were aged 14–15 years, 39.8% (41/103) were 16–17 years, and 48.5% (50/103) were 18–19 years.

Contraceptive methods used at the start and end of visits are shown in Table 2. Among all eligible visits, 47.8% (215/450) had documentation of LARC counseling. Among visits with documentation of LARC counseling, 45.6% (98/215) had documentation of a LARC placement plan. Among patients who decided to initiate LARC, 40.8% (40/98) had a device placed at the same visit. For women who made a decision to initiate LARC, but did not have a LARC device placed during the same visit, 62.1% (36/58) preferred to return for placement, 34.5% (20/58) were recommended by a clinician to return for placement at a later date, and 3.4% (2/58) were unable to have the device placed at that visit due to lack of device availability or insurance coverage for placement that day. LARC uptake was significantly higher in women aged 14–19 years (53.2%) compared to women aged 20–25 years (44.9%) ($P=.03$). However, the documentation of LARC discussion was not statistically different among age groups. There was no statistically significant difference in documented LARC discussion ($P=.49$) or LARC uptake by race ($P=.46$)

The logistic regression analysis for variables associated with documentation of LARC discussion demonstrated that appointment type and contraceptive method at the beginning of the visit were significantly associated with discussion of LARC in univariate analysis (Table 3). In multivariable analysis using the largest category of each variable as a reference group, age and contraception at the beginning of the visit were independently associated with LARC discussion adjusted for race, insurance status, and visit type. (Table 3). The logistic regression analysis for variables associated with LARC uptake demonstrated that age group and visit type were associated with uptake of LARC in univariate analysis (Table 4). In multivariable analysis using the largest category of each variable as a reference group, age and visit type were independently associated with LARC uptake adjusted for race and contraception at visit start (Table 4). Insurance status was removed from the multivariable analysis because this covariate did not reach a significant cutoff, nor it was not a confounder.

Secondary data analyses using unique patients as a unit of analysis were conducted and found that the percentages of documentation of LARC discussion and LARC placement plan were consistent with the per-visit basis analysis. Logistic regression analyses using unique patients as a unit of analysis also produced consistent results.

DISCUSSION

As recommended by ACOG and ACNM, LARC is first-line contraception in adolescent and young adult populations.^{13,14} A critical factor in increasing use of effective contraception is providing contraceptive counseling for these methods, as women who receive education about specific contraceptive methods are more likely to use those methods.²² However, in our residency teaching clinic, less than half of young women eligible for LARC had LARC education documented in their clinical record. This indicates that clinicians in these settings may not consistently adhere to recommendations by professional organizations emphasizing LARC as first-line contraception. Although documentation of LARC discussion is not a perfect indicator of LARC education, such documentation is particularly important in training settings with limited continuity of patient care.

In addition, nearly a quarter of eligible visits ended with no contraception, despite the immediate availability of most LARC methods and a strong emphasis on family planning in didactic and practical training in this setting. The results of this study will inform future investigation into why a substantial number of visits ended without a contraceptive method being prescribed or provided. Further study should be conducted on barriers and motivators to contraceptive initiation among this population.

Among all eligible visits, uptake of LARC in this clinic was approximately 9%. This study highlights the systemic barriers to LARC initiation even among women who choose the method. Approximately 20% of patients who decided to initiate LARC did not have a LARC device placed during the same visit despite their preference to have it placed that day. To improve LARC access, the clinical practice of a single visit contraceptive service may play a significant role as this practice is the most significant predictor of LARC device placement by advanced practice clinicians²³. Kelly et al²³ demonstrated the essential roles of advanced practice clinicians in providing LARC services. Approximately 80% of advanced practice clinicians in this study placed LARC devices in the past year.²³ Although our study addressed only physicians, other advanced practice clinicians are important to LARC uptake since they are closely involved in the training of physicians in many settings and can make a significant impact on these trainees' ability to provide comprehensive evidence-based contraceptive services.²⁴

Our multivariable analysis showed that women aged 14–19 years were more likely to have documentation of LARC counseling while those using more effective contraception at the beginning of the visit were less likely to have documentation of LARC counseling. These results reveal that clinicians may not be evaluating all patients' contraceptive needs, satisfaction and risk for pregnancy routinely despite the recommendations of professional societies that healthcare providers assess women's contraceptive needs and counsel accordingly at every visit.^{13–14} Our results did not show significant disparities in LARC counseling or uptake based on race or ethnicity, even though disparities had been previously noted in this population with regard to sexually transmitted infection screening.²⁵ These findings should be examined further in a larger sample powered to detect such differences.

Our study had several limitations. First, we relied on data available in medical charts in a single hospital-based resident obstetrics and gynecology clinic, so generalizability to other patient populations or other medical practices may be limited. However, this clinic serves as the primary outpatient training site for the only civilian obstetrics and gynecology training program in the state. Second, due to the nature of cross-sectional studies, causal relationships between demographic factors and LARC counseling and uptake could not be established. Third, the demographic data of race and ethnicity were collected from the electronic health record, which may not represent the self-identified racial identity of all patients. For example, while 23% of persons in Hawai'i identify as being of mixed race,³ the electronic health record permits only one race/ethnicity identification per patient. Fourth, variables such as discussion of LARC methods were obtained from clinician documentation, so information bias might occur if the clinician who provided the counseling did not accurately reflect the counseling in the medical record. For instance, clinicians may be more likely to document LARC counseling for patients who select LARC methods than for patients who do not choose LARC. Nevertheless, we made an extensive effort to review the entirety of clinician documentation in order to capture LARC counseling as thoroughly as possible.

Strengths of our study include evaluation of the entire population of clinic visits by non-pregnant women 14–25 years old over a given calendar year. Given that the introduction of new resident and attending physicians takes place at the start of July, we believe that evaluation over a calendar year provides the most accurate reflection of standard practice in this clinical setting. Additionally, to optimize the accuracy of contraceptive method discussion and uptake, we reviewed all available aspects of the medical records, including resident and attending-level clinician notes and prescription histories, and did not rely on lower fidelity methods such as charge codes. Further, to our knowledge, this study is the first to address clinician adherence to documentation of LARC education consistent with current standards of care and to examine the impact of demographic factors on documentation of LARC discussion and uptake in a residency training clinic setting.

Clinicians in this training clinic may not consistently adhere to medical professional recommendations regarding LARC-first counseling. Increasing uptake of LARC is an important public health intervention for addressing unintended pregnancy. Every clinical visit is an opportunity to assess risk of unintended pregnancy and ensure that contraceptive needs are addressed.

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QUICK POINTS

- Increasing uptake of long-acting reversible contraception (LARC) is an important public health intervention for addressing high unintended pregnancy rates.
- Clinicians in a training clinic may not consistently adhere to medical professional recommendations regarding LARC-first counseling.
- Women aged 14–19 years are more likely to have documentation of LARC counseling than women aged 20–25 years. Those using effective forms of contraception are less likely to have documentation of LARC counseling compared to women who are not using contraception.
- Every clinical visit is an opportunity to assess risk of unintended pregnancy and ensure that contraceptive needs are addressed.

Figure 1.

Flow diagram of included and excluded visits

Abbreviations: LARC, Long-acting reversible contraception

Table 1.

Demographic characteristics of a total of 305 unique patients

Demographic characteristics	Value
Age, n (%)	
14–19	103 (33.8)
20–25	202 (66.2)
Ethnicity, n (%)	
Hispanic or Latino	5 (1.6)
not Hispanic or Latino	298 (97.7)
not documented	2 (0.7)
Race, n (%)	
Asian ^a	81 (26.6)
Pacific Islander ^b	62 (20.3)
White	57 (18.7)
Native Hawaiian	84 (27.5)
Other ^c	21 (6.9)
Type of insurance, n (%)	
Public	208 (68.2)
Private	34 (11.1)
Clinic funded	17 (5.6)
Federal	8 (2.6)
None	38 (12.5)
Type of scheduled visit, n (%)	
Gynecologic care (primary)	59 (19.3)
Gynecologic care (follow-up)	49 (16.1)
Annual examination	74 (24.3)
Postpartum examination	123 (40.3)
Patient marital status, n (%)	
Single	249 (81.6)
Married	53 (17.4)
Not documented	3 (1.0)

^a Asian race was comprised of predominantly Filipino (51.9%) and Japanese (12.4%) women.

^b Pacific Islander included Micronesian (47.5%), Marshallese (21.3%), and Samoan (23.0%) women.

^c Other included Native American, Alaska Native, and black women, as well as those who preferred not to answer.

Table 2.

Contraceptive methods at the beginning and conclusions of clinic visits (N = 450 visits)

Contraceptive methods	Start of visit, n (%)	End of visit, n (%)
Copper IUD	0 ^a	2 (0.4)
Levonorgestrel IUD	0 ^a	10 (2.2)
Implant	0 ^a	28 (6.2)
DMPA	110 (24.4)	154 (34.2)
COCs	52 (11.6)	98 (21.8)
POPs	5 (1.1)	7 (1.6)
Patch	0	3 (0.7)
Ring	1 (0.2)	2 (0.4)
Condoms	43 (9.6)	26 (5.8)
LAM	5 (1.1)	3 (0.7)
Other NFP such as withdrawal method	3 (0.7)	1 (0.2)
Planned abstinence	46 (10.2)	8 (1.8)
Emergency contraceptive pills	2 (0.4)	3 (0.7)
None	183 (40.7)	105 (23.3)

Abbreviations: COCs, combined oral contraceptive pills; DMPA, depot medroxyprogesterone acetate; IUD, intrauterine device; LAM, lactational amenorrhea method; NFP, natural family planning method; POPs, progestin only pills.

^aSubjects who had LARC in place at start of visit were excluded from the analysis.

Table 3.

Unadjusted and adjusted odds ratios and 95% confidence intervals for LARC discussion (N=450 visits)

Independent variables	Unadjusted OR(95% CI)	P	Adjusted OR ^a (95% CI)	P
Age, y				
14–19	1.39 (0.89–2.17)	.14	1.79 (1.08–2.99)	.03
20–25	Reference		Reference	
Race				
Asian	1.14 (0.67–1.95)	.62	1.16 (0.66–2.06)	.60
Pacific Islander	1.64 (0.87–3.09)	.13	1.96 (0.91–4.24)	.08
White	1.21 (0.62–2.34)	.58	1.43 (0.71–2.90)	.31
Other ^b	1.32 (0.56–3.11)	.53	1.21 (0.49–3.03)	.67
Native Hawaiian	Reference		Reference	
Type of insurance				
Private	0.98 (0.55–1.75)	.94	1.15 (0.61–2.16)	.66
Clinic funded	1.72 (0.55–5.35)	.35	1.21 (0.41–3.62)	.73
Federal	0.71 (0.17–2.99)	.63	0.49 (0.10–2.42)	.38
None	0.62 (0.32–1.20)	.15	0.50 (0.23–1.10)	.08
Public	Reference		Reference	
Type of Scheduled Visit				
Gynecologic care (initial visit)	0.54 (0.31–0.94)	.02	0.58 (0.32–1.07)	.08
Gynecologic care (follow-up visit)	0.62 (0.35–1.10)	.10	0.68 (0.34–1.33)	.26
Annual examination	1.14 (0.66–1.95)	.64	1.32 (0.71–2.45)	.38
Postpartum examination	Reference		Reference	
Contraception at visit start				
Short-term hormonal methods ^c	0.37 (0.23–0.61)	< .001	0.36 (0.22–0.60)	< .001
Condoms	1.13 (0.57–2.23)	.73	1.06 (0.50–2.26)	.88
Planned abstinence	2.06 (0.97–4.36)	.06	2.30 (0.99–5.31)	.05
Other ^d	0.35 (0.09–1.37)	.13	0.26 (0.06–1.12)	.07
None	Reference		Reference	

Abbreviations: CI, Confidence interval; LARC, Long-acting reversible contraception; OR, Odds ratio.

^aMultivariable analysis included age, race, type of insurance, visit type, and contraception at visit start.^bOther included Native American, Alaska Native, and black women, as well as those who preferred not to answer.^cShort-term hormonal methods included DMPA, COCs, POPs, contraceptive patch, and vaginal ring.^dOther included lactational amenorrhea method, withdrawal method, and emergency contraceptive pills.

Table 4.

Unadjusted and adjusted odds ratios (ORs) and 95% confidence intervals (CIs) of LARC uptake (N=450 visits)

Independent variables	Unadjusted OR(95% CI)	<i>P</i>	Adjusted OR ^a (95% CI)	<i>P</i>
Age (Years)				
14–19	2.13 (1.10–4.15)	.02	2.71 (1.37–5.39)	.004
20–25	Reference		Reference	
Race				
Asian	0.74 (0.30–1.83)	.52	0.73 (0.30–1.77)	.48
Pacific Islander	1.30 (0.53–3.18)	.56	1.43 (0.53–3.89)	.49
White	0.59 (0.18–1.90)	.37	0.63 (0.19–2.08)	.44
Other ^b	1.59 (0.47–5.37)	.45	1.19 (0.29–4.92)	.80
Native Hawaiian	Reference		Reference	
Type of Scheduled Visit				
Gynecologic care (initial visit)	0.46 (0.18–1.15)	.10	0.36 (0.13–0.97)	.04
Gynecologic care (follow-up visit)	0.34 (0.12–0.99)	.04	0.28 (0.09–0.85)	.02
Annual examination	0.63 (0.26–1.49)	.30	0.54 (0.22–1.32)	.17
Postpartum examination	Reference		Reference	
Contraception at visit start				
Short-term hormonal methods ^c	0.66 (0.28–1.58)	.35	0.66 (0.24–1.83)	.43
Condoms	2.25 (0.88–5.74)	.09	2.64 (0.86–8.10)	.09
Planned abstinence	2.35 (0.93–5.94)	.07	1.87 (0.57–6.09)	.30
Other ^d	1.26 (0.15–10.32)	.83	0.83 (0.11–6.06)	.85
None	Reference		Reference	

Abbreviations: CI, Confidence interval; LARC, Long-acting reversible contraception; OR, Odds ratio.

^aMultivariable analysis included age, race, visit type, and contraception at visit start.

^bOther included Native American, Alaska Native, and black women, as well as those who preferred not to answer.

^cShort-term hormonal methods included DMPA, COCs, POPs, contraceptive patch, and vaginal ring.

^dOther included lactational amenorrhea method, withdrawal method, and emergency contraceptive pills.